Claims

What is claimed is:

1. An apparatus for controlling a fuel injector, comprising:

a rail pressure sensor coupled with a rail of the fuel injector and operable to transmit a rail pressure signal as a function of the rail pressure during a zero fuel condition;

an engine speed sensor operable to be coupled with an engine, the engine speed sensor operable to transmit an engine speed signal as a function of the engine speed of the engine during the zero fuel condition; and

a controller coupled with the rail pressure sensor to receive the rail pressure signal and with the engine speed sensor to receive the engine speed signal, the controller operable to transmit an injection signal to the fuel injector that is operable to cause the fuel injector to inject fuel into the engine, the controller further operable to determine an adjustment to the injection signal as a function of the rail pressure signal and the engine speed signal received during the zero fuel condition.

2. The apparatus of claim 1 wherein the zero fuel condition comprises at least one of:

an engine deceleration; and

an engine shut-down.

3. The method of claim 1 wherein the adjustment comprises:

an increase in the quantity of a subsequent fuel shot for a predetermined condition when the rate of change in engine speed corresponding to the at least one fuel shot is less than a predetermined value; and

a decrease in the quantity of a subsequent fuel shot for a predetermined condition when a rate of change in engine speed corresponding to the at least one fuel shot is greater than a predetermined value.

4. The apparatus of claim 1 wherein the adjustment comprises:

an increase to the duration of a subsequent fuel shot when the rate of change in engine speed corresponding to the fuel shot is less than a predetermined value; and

a decrease to the duration of a subsequent fuel shot when a rate of change in engine speed corresponding to the fuel shot is greater than a predetermined value.

5. The apparatus of claim 1 wherein the rail pressure drop comprises a rail pressure drop of a rail supplying fluid to the fuel injector.

6. The apparatus of claim 5 wherein the fluid comprises one of:

gasoline;

diesel fuel; and

hydraulic fluid.

7. The apparatus of claim 1 wherein the adjustment to the injection signal comprises an adjustment to the fuel injection signal as a function of a predetermined mathematical formula of a plurality of rail pressure drops and their corresponding changes in engine speed.

8. The apparatus of claim 7 wherein the predetermined mathematical formula comprises at least one of:

an average of a plurality of rail pressure drops and their corresponding changes in engine speed; and

a weighted average of a plurality of rail pressure drops and their corresponding changes in engine speed.

9. A method for controlling a fuel injector, comprising:

injecting a fuel shot during a zero fuel condition;

determining a rail pressure drop corresponding to the fuel shot;

determining a change in engine speed corresponding to the fuel shot; and

determining an adjustment to the fuel injection as a function of the rail pressure drop and the corresponding change in engine speed.

10. The method of claim 9 wherein the zero fuel condition comprises at least one of:

an engine deceleration; and

an engine shut-down.

11. The method of claim 9 wherein the adjustment comprises:

increasing the quantity of a subsequent fuel shot for a predetermined condition when the rate of change in engine speed corresponding to the fuel shot is less than a predetermined value; and

decreasing to the quantity of a subsequent fuel shot for a predetermined condition when a rate of change in engine speed corresponding to the fuel shot is greater than a predetermined value.

12. The method of claim 9 wherein the adjustment comprises:

increasing the duration of a subsequent fuel shot for a predetermined condition when the rate of change in engine speed corresponding to the at least one fuel shot is less than a predetermined value; and

decreasing the duration of a subsequent fuel shot for a predetermined condition when a rate of change in engine speed corresponding to the at least one fuel shot is greater than a predetermined value.

13. The method of claim 9 wherein the rail pressure drop comprises a rail pressure drop of a rail supplying fluid to the fuel injector.

14. The method of claim 13 wherein the fluid comprises one of:

gasoline;

diesel fuel; and

hydraulic fluid.

15. The method of claim 9 wherein determining an adjustment to the fuel injection as a function of the rail pressure drop and the corresponding change in engine speed comprises determining an adjustment to the fuel injection as a function of a predetermined mathematical formula of a plurality of rail pressure drops and their corresponding changes in engine speed.

16. The method of claim 15 wherein the predetermined mathematical formula comprises at least one of:

an average of a plurality of rail pressure drops and their corresponding changes in engine speed; and

a weighted average of a plurality of rail pressure drops and their corresponding changes in engine speed.